



## I. BACKGROUND

Plaintiff KIPB LLC (formerly known as Kaist IP US, LLC) (“Kaist”) has asserted the ’055 Patent against Defendants Samsung Electronics Co., Ltd., Samsung Electronics America, Inc., Samsung Semiconductor, Inc., Samsung Austin Semiconductor, LLC, and Qualcomm Global Pte. Ltd. (collectively “Defendants”). In a prior action, claim construction issues between the parties regarding the ’055 Patent were litigated.<sup>2</sup> *KAIST IP US LLC v. Samsung Elecs. Co., Ltd., et al.*, No. 2:16-cv-01314-JRG-RSP (“First Case”). In the First Case, this Court issued a claim construction order. First Case, Dkt. 179 (Cl. Construction Memorandum Opinion and Order) (“First Case Order”). A final judgment was issued in the First Case on February 21, 2020. First Case, Dkt. No. 678. Appeals in the First Case have not yet been completed. After the issuance of the First Case Order, the United States Patent and Trademark Office (“Patent Office”) has rejected the asserted claims in an *ex parte* reexamination (“EPR”). The EPR is still ongoing. The technology and legal background of the First Case Order is applicable in the present case, and thus, will not be repeated here. Ten terms are in dispute between the Parties (Terms #1–10). The Court refers to the same term numbers as used by the parties.

## II. AGREED TERMS

Prior to the oral hearing, the parties agreed to the following terms:

Term	Agreed Construction
“a certain height” (all asserted claims)	Plain and ordinary meaning
“a gate oxide layer which is formed on both	Plain and ordinary meaning

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<sup>2</sup> The parties in the present case were also in the First Case except Qualcomm Global Trading Pte. Ltd. was not in the First Case, rather the parent entity Qualcomm Inc. was a party in the First Case.

Term	Agreed Construction
side-walls of the Fin active region” (all asserted claims)	
“a first oxide layer which is formed on the upper surface of said Fin active region” (all asserted claims)	Plain and ordinary meaning
“a gate which is formed on said first and second oxide layer” (all asserted claims)	Plain and ordinary meaning
“a source/drain region which is formed on both sides of the Fin active region except where said gate overlaps with the Fin active region” (all asserted claims)	Plain and ordinary meaning

Dkt. No. 66-1 at 12–13.

### **III. DISPUTED TERMS FOR WHICH THE FIRST CASE CONSTRUCTION IS ADOPTED FOR THE REASONS IDENTIFIED IN THE FIRST CASE**

Ten terms remain in dispute. A number of terms in dispute were previously construed by this Court in the First Case. As to four terms (Terms #1, #5, #6 and #8), Defendants do not agree with the Court’s prior constructions but stand on their prior briefing, contending that Defendants are doing so to preserve those issues for appeal. As the issues before this Court on these four terms are substantially the same as in the First Case, the Court adopts the prior constructions for the same reasons as stated in the First Court Order. These four terms are listed below:

Term	Court's Construction
#1 “a double-gate FinFET device” (claims 1 and 13)	The preamble is not limiting
#5 “said doping junction depth for the source/drain formed in said Fin active region, when the upper surface of said second oxide layer is taken as a reference level (0 nm), is around 0 nm for 50 nm above the reference level” (claim 11)	The term is not indefinite and the term has its plain and ordinary meaning
#6 “said doping junction depth for the source/drain formed in said Fin active region, when the upper surface of said second oxide layer is taken as a reference level (0 nm), is around 0 nm to -50 nm below the reference level” (claim 12)	The term is not indefinite and the term has its plain and ordinary meaning.
#8 “the oxidation layer” as the term is used in the phrase “the resistance of said Fin active region is reduced by enlarging the width of said Fin active region within <u>the oxidation layer</u> as it approaches the bulk silicon substrate” (claim 13)	The term is not indefinite and the term “the oxidation layer” means “the second oxide layer.”

First Case Order at 9–17 and 40–47.

#### IV. REMAINING DISPUTED TERMS

Generally, Kaist contends that issue preclusion applies to all of the terms presently disputed. Dkt. No. 61 at 4–12. In the briefing, Defendants contended that as no appeals had been filed or decided yet at that time, the parties are not precluded from litigating claim construction issues. Dkt. No. 63 at 2. Further, as to the remaining terms, Defendants contend that five terms (Terms #2–4, 7 and 9) have been encumbered with significant prosecution history in the EPR after

the First Case Order, thus warranting additional consideration by this Court as to the proper construction of those terms. Dkt. No. 63 at 1–2. As to Term #10, Defendants contend that the Court previously did not construe this term.

Having reviewed the intrinsic evidence, extrinsic evidence and arguments raised, the Court finds that it is not necessary to decide the issue preclusion question to reach the Court’s claim construction conclusions provided herein. The remaining terms, Terms #2–4, 7, 9, and 10, are discussed below.

**2. “a contact region and a metal layer which are formed at said source/drain and gate contact region” (claims 1 and 13)**

<b>Kaist’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
Plain and ordinary meaning	Indefinite

In the First Case, this term was agreed to have a plain and ordinary meaning. Dkt. No. 61 at 14. Defendants contend that in the EPR, the Patent Office found the term to be indefinite because it was unclear as to how the claimed transistor would be operative. Dkt. No. 63 at 16.

**A. Positions of the Parties**

Kaist contends that in the First Case this term was agreed to have a plain and ordinary meaning and that Defendants are precluded from re-arguing the term. Dkt. No 61 at 14–15. Specifically, Kaist notes that the Defendants originally disputed this term but then agreed to a plain and ordinary meaning prior to the claim construction hearing. *Id.* Further, Kaist contends that in the First Case trial, Defendants’ expert was able to understand the term sufficiently to apply the term to prior art presented as part of Defendants’ invalidity defense. *Id.* at 16.

Kaist contends that it is misleading to assert that the term was found indefinite in the EPR as the Examiners did not make a finding that the term was indefinite. Rather, Kaist contends that the Examiners attributed a definite understanding to the term for the purposes of examination of the claim, and that the Examiners' comment as to definiteness was nothing more than dictum found in a footnote. *Id.* at 16. Kaist further contends that indefiniteness rejections under 35 USC § 112 are not permitted under the EPR rules except with regard to new claims. Thus, Kaist notes that the Examiners applied a meaning to the "phrase as best as possible to address the prior art." *Id.* at 17 (citing Dkt. No. 61-19 at 11, n.1). Kaist further contends that the Examiners' incidental opinion on definiteness has no legal effect. Dkt. No. 65 at 9.

Defendants contend that in the EPR's Final Office Action, the Examiners identified that this claim term is indefinite because it is unclear how the transistor as claimed would even be "operative." Dkt. No. 63 at 16 (citing Dkt. No. 63-8 (June 18, 2019 Final Office Action), at 11). Defendants note that the Examiners found that "this phrase requires one contact region and one metal [layer] that is formed at three distinct locations, the source, the drain and the gate contact regions." *Id.* As a result, the Examiners concluded that "one having ordinary skill in the art would not understand how a single contact region and metal layer would be located at all such locations and still be operative as a transistor." *Id.* at 16–17. Defendants contend that the specification teaches that contact regions 46 (plural) are utilized for electrically connecting a metal layer 48 with the source/drain in the Fin active region 4." *Id.* at 17 (citing KIPB Br., Ex. 19 ('055 Patent), at 7:50–52). Defendants contend that the Examiners are correct that the claim term on its face would be inoperative because a single contact region connecting the metal layer to all of the source/drain and gate regions would electrically short out the transistor. Thus, according to the Defendants, the

claim language must be indefinite because its plain and ordinary meaning would result in an inoperative transistor. *Id.*

Defendants contend that after finding that the term requires “one contact region and one metal that is formed at three distinct locations,” the Examiners found that “the 055 Patent has no written description of such a contact region and metal layer located at all such distinct locations.” *Id.* (quoting Dkt. No. 63-8 (June 18, 2019 Final Office Action) at 11). The Defendants note the Examiners’ comments:

[I]n view of the lack of written description and lack of definite claim language, this phrase would generally be rejectable under 35 U.S.C. §112 (2nd ¶) and/or 112 (1st ¶). However, such rejections are not permitted in ex parte reexamination. See 36 C.F.R. §1.552. Thus, Examiners are interpreting this phrase as best as possible to address the prior art.

*Id.* at 17–18 (quoting Dkt. No. 63-8 (June 18, 2019 Final Office Action) at 11, n. 1). Defendants contend that the Examiners relied on Figure 6d in an attempt to interpret the claim. Defendants contend that as can be seen from Figure 6d “three contact regions 46 and three metal layers 48” as opposed to the term’s “one contact region and one metal” are formed at three locations:

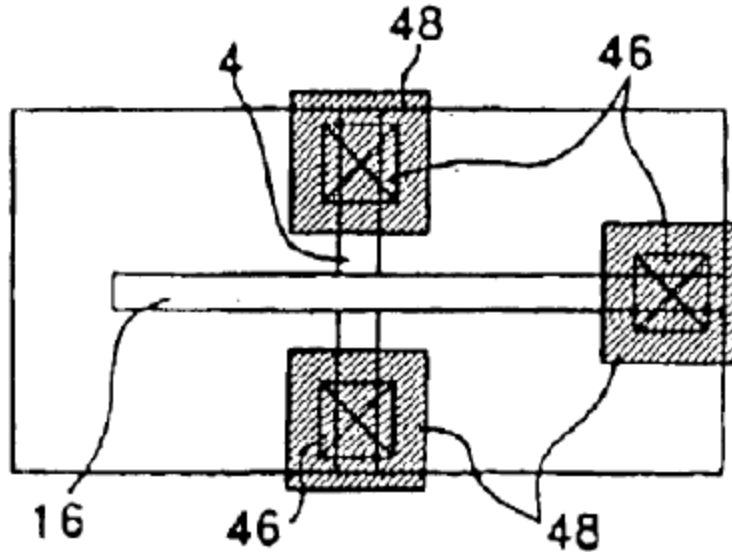


Fig. 6d

*Id.* (quoting Dkt. No. 63-8 (June 18, 2019 Final Office Action) at 11).

Defendants contend that as to this issue being raised in the First Case, Kaist ignores that significant new prosecution history (the Examiners' statements referenced above) has been created since the prior prosecution history. Dkt. No. 63 at 18. According to the Defendants, the Examiners made it clear that they thought the term was indefinite and were only attempting to construe the term "as best as possible to address the prior art." *Id.* Defendants also assert that this statement does not render the term definite. *Id.* at 19. Instead, they assert that this statement clearly indicates that one skilled in the art would not understand how a single contact region and metal layer would be located at all such locations and still be operative. *Id.* at 19.



## **B. Analysis**

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. A claim, when viewed in light of the intrinsic evidence, must “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). If it does not, the claim fails § 112, ¶ 2 and is therefore invalid as indefinite. *Id.* at 901. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. *Id.* at 911.

The evidence before this Court makes clear that the experts for both Kaist and Defendants were able to understand the meaning of the term in question and apply the term for validity and infringement issues in the First Case. Defendants have not brought forward sufficient new evidence contradicting the previous testimony of those skilled in the art.

Defendants point to comments made by the Examiners. As an initial matter, it is noted that Examiners utilized a broadest reasonable interpretation standard for interpreting the claims. Dkt. No. 61-18 (Non-Final Office Action Dated February 13, 2019) at 4–5. That the claims in the abstract divorced from the specification and understanding of those skilled in the art could possibly be interpreted in an inoperable manner is not controlling. Rather, this Court is bound by different standards, those imposed in cases such as *Phillips* and *Nautilus*. Further, it is noted that the Examiners themselves were able to sufficiently interpret the claims to apply prior art against the claim term.

More importantly, the Examiners’ comments do not conform to the teachings of the specification. The specification of the ’055 Patent teaches that the various layers and structures are patterned layers and structures. ’055 Patent Figures 2a–13d and associated text. There is no dispute

that this is common knowledge to those skilled in the art of FET fabrication and this conforms with the evidence of the experts.

The Examiners' comments which seemingly indicate that the term could be construed to indicate that a single metal layer must short out each of the source, drain, and gate together (and thus render the device inoperable) fail to consider that the structures and layers in the patent are patterned. Thus, a metal layer as shown in the patent and known in the art may have varying segments, all of which are not electrically coupled together. Similarly, a contact region may have many individual contacts, not all connected. Thus, for example, the patent describes and shows with reference to Figure 6d "a metal layer 48 for wiring" that is composed of patterned multiple segments that are not all connected. '055 Patent at 7:42–43, Figure 6d. Similarly, the patent describes that a photolithography process (a patterning process) is used to form the contact region ("a photolithography process is carried out for forming a contact region 46") which as shown in the patent would comprise a plurality of patterned contacts. '055 Patent at 8:51–52.

At the oral hearing, when the Court asked if one of skill in the art would understand that the metal layer is not a continuous piece of metal but rather the layer is patterned by photolithography, Defendants argued that the specification only teaches a metal layer applied to all of the gate, source, and drain regions (implying that it is continuous) and stating "[t]here's no place in this patent where it tells us you're going to separately instantiate those metal layers." Dkt. No. 73 at 31–32. Defendants are in effect seeking to have the Court add the limitation to the claim that the metal layer is a "*continuous* metal layer." However, though Defendants argue that there is no teaching of patterning the metal layer, in addition to the figures, the specification explicitly states otherwise: "A metal layer 48 is deposited to be electrically connected with the source/drain and a metal wiring is formed through a photolithography process." '055 Patent 8:50–52. It is clear

that the figures and text of the specification do not teach a continuous metal layer that shorts out all the features—the figures and text teach the opposite. The claim merely calls out a metal layer. The plain language of the claims does not require the layer to be continuous and short out all features, and the specification and extrinsic evidence do not teach the layer to be continuous. The Court rejects Defendants’ arguments.

Interpretation of claims must give consideration to the disclosure of the specification. In light of the specification of the ’055 Patent, the Term #2 is not indefinite. Such a finding also conforms to expert evidence presented in the First Case by both parties.

The Court finds that **“a contact region and a metal layer which are formed at said source/drain and gate contact region”** is **not indefinite** and has its **plain and ordinary meaning**.

3. **“the device as claimed in claim 1, wherein the parasitic capacitance between said gate and bulk silicon substrate is reduced by selecting the thickness of said second oxidation layer to be between 20 nm and 800 nm” (claim 5)**

<b>Kaist’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
Not indefinite. Plain and ordinary meaning.	Indefinite hybrid claim

In the First Case, Defendants argued that there is no antecedent basis for “said second oxidation layer” and that the term “reduced” is indefinite for the amount of reduction. First Case Order at 30–32. Now, Defendants contend that the claim is indefinite for being a mixed apparatus and method claim. Specifically, Defendants contend that the limitation “reduced by selecting” interjects method steps into the claim and is invalid under *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005). Dkt. No. 63 at 19–21.

### **A. Positions of the Parties**

Kaist contends that, at the First Case trial, the Defendants and their expert had no problem understanding the term and applying the term to the prior art. Dkt. No. 61 at 17–18. Kaist contends that the EPR Examiners did not find the term indefinite but noted that the term appeared to include a method step. Kaist states that the Examiners initially ignored the “by selecting” language but ultimately still indicated an understanding of the term by applying the term “even if Examiners assume a selection is made.” *Id.* (quoting Dkt. No. 61-19 at 57–58).

Defendants contend that the term renders the claim invalid for inclusion of mixed apparatus and method limitations. Dkt. No. 63 at 19 (citing *IPXL*, 430 F.3d at 1384). Defendants state that the EPR Examiners found the claims to be a hybrid of apparatus and method limitations:

Examiners first note the claims are hybrid claims. Specifically, claims 5 and 6 and claim 1, from which claims 5 and 6 depend, are all product claims. Nevertheless, claims 5 and 6 have the method steps of “by selecting” the thickness or size of certain features recited in claim 1.

Dkt. No. 63 at 20 (quoting Dkt. No. 63-8 (June 18, 2019 Final Office Action) at 57). Defendants contend that the inclusion of “reducing” the parasitic capacitance by “selecting” is a method step. Defendants contend that it is unclear whether it is the device or the method of selecting the thickness of the second oxide that constitutes the infringement.<sup>3</sup> Dkt. No. 63 at 21.

In reply, Kaist contends that Defendants’ assertion (Dkt. No. 63 at 23) that a person of skill in the art would be uncertain as to whether the action of “selecting,” or instead the device with properties influenced by the selection, actually causes the infringement is a distinction without a

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<sup>3</sup> Defendants also note that in the First Case they contended that “said second oxidation layer” was indefinite. Defendants contend that they still assert the term is indefinite for that reason also, and Defendants stand on their prior briefing with regard to that issue. Similarly, Defendants stand on their prior briefing with regard to whether “parasitic capacitance . . . is reduced” is indefinite as to when and how much reduction is needed. Dkt. No. 63 at 21, n.3 and n.4.

difference. Dkt. No. 65 at 10. Kaist contends that Defendants’ argument is further contradicted by Defendants’ experts having no difficulty understanding and applying these terms to the prior art in the First Case. *Id.*

## **B. Analysis**

The holding in *IPXL* was based on the concern that notice should be given to the public as to whether infringement occurs when one creates a system or when the user actually uses the system. *IPXL Holdings L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005). Thus, claims in which mixed claiming has been found to be improper create such confusion. *Id.* (the claim language included “and the user uses the input means to either change”); *In re Katz Interactive Call Processing Patent Litig.*, 639 F.3d 1303, 1318 (Fed. Cir. 2011) (the claim language included “said certain of said individual callers digitally enter data”).

The claim language at issue here does not create such confusion. The language in question is directed toward the design criteria of the structure and its capabilities, not the subsequent use of the product. The language in question is more akin to the formation of a particular structure to have certain capabilities, which does not cause the problems identified in *IPXL*. *See Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008) (stating that the claim “is clearly limited to a pipelined processor possessing the recited structure and capable of performing the recited functions”); *SFA Sys., LLC v. 1-800-Flowers.com, Inc.*, Case No. 6:09-cv-00340, 940 F. Supp. 2d 433, 454–55 (E.D. Tex. April 11, 2013) (Davis J.) (“*1-800-Flowers.com*”) (“If the functional language of the claim merely describes ‘the structure and capabilities of the claimed apparatus,’ then the claim is sufficiently definite under 35 U.S.C. § 112 ¶ 2”); *Eolas Techs., Inc. v. Adobe Sys., Inc.*, Case No. 6:09-cv-00446, 810 F. Supp. 2d 795, 812–14 (E.D. Tex. Aug. 22, 2011) (Davis, J.), *withdrawn in nonrelevant part by* 2011 WL

11070303 (E.D. Tex. Sept. 23, 2011) (“functional apparatus language is not indefinite when it describes the capabilities of the apparatus.”). As this Court has noted, relevant questions include whether it is clear that what is relevant is the system as created such that any infringement occurs upon creation of the claimed system:

Defendants cite to *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005), *Katz Interactive Call Processing Patent Litigation v. Am. Airlines, Inc.*, 639 F.3d 1303, 1318 (Fed. Cir. 2011), and their progeny, and argue the claims at issue similarly mix method and apparatus claims. However, the claims in those cases suffered from a true ambiguity as to whether the claims require building a product or performing a method. In particular, those cases involved apparatus claims incorporating steps where a user acts upon the system. Here, the claims involve capabilities of the system, as limitations on the “event manager” and “subsystem” structural elements. The functional language merely describes the functional capability of the claimed structures. Therefore, there is no uncertainty about when infringement would occur—it plainly occurs when a system is created that can perform the claimed functions.

Further, the language present in the claims is functional despite the lack of “configured to” or similar wording . . . . One of ordinary skill in the art would understand that [the claims] are limited to an apparatus, and that any infringement occurs upon creation of the claimed system.

*1-800-Flowers.com*, 940 F. Supp. 2d at 454–55. The claim language at issue here does not create the confusion to which *IPXL* is directed. As drafted, the claims provide clarity as to when infringement occurs.

Defendants argued at the hearing that in order to determine if infringement occurred one would need more than just the product but additional manufacturing information (presumably through discovery by patentees or knowledge of the manufacturing process by accused infringers). *See* Dkt. No. 73 at 53–54. Defendants summarized their argument in their hearing presentation as:

It would be unclear to a person of ordinary skill in the art whether infringement is triggered by, either:

- 1) “selecting,” OR
- 2) The device resulting from the selection.

Dkt. No. 68-1 (Defendants’ Oral Hearing Slides) at 68. It is this very question that the Court finds not to be unclear. The Court finds that the claims and specification make clear that what is claimed is the completed device and mere “selecting” does not provide infringement. Rather, it is the claim as a whole that is relevant. The parties and their experts all understood this in the First Case. This clarity is not changed by the EPR. The EPR Examiners provided these comments while applying a broadest reasonable interpretation of the claims but were still able to understand and apply the claims to the art. In context of the claims themselves, the specification, all the prosecution history, and the extrinsic evidence of the Experts, the Court finds that the claims are not indefinite.

For the reasons recited in the First Case Order, the Court further finds that “said second oxidation layer” means “said second oxide layer.” First Case Order at 30–32,

The Court finds that **“the device as claimed in claim 1, wherein the parasitic capacitance between said gate and bulk silicon substrate is reduced by selecting the thickness of said second oxidation layer to be between 20 nm and 800 nm”** is **not indefinite**. The Court finds that **“said second oxidation layer”** means **“said second oxide layer”** and that the reminder of the term has its **plain and ordinary meaning**.

4. **“the device as claimed in claim 1, wherein the contact resistance is reduced by selecting the size of a contact region which is in contact with said metal layer to be greater than the width of said Fin active region and/or the length of said gate” (claims 6, 7, 9, 10, and 19)**

Kaist’s Proposed Construction	Defendants’ Proposed Construction
Not indefinite. Plain and ordinary meaning.	Indefinite hybrid claim

In the First Case, Defendants argued that the term “reduced” is indefinite as to the amount of reduction and that that the term “size” was indefinite in how it is measured (length, width,

volume, etc.). First Case Order at 33–36. Now, Defendants contend that the claim is indefinite for being a mixed apparatus and method claim. The issue presented to the Court for Term #4 is similar to the issue presented for Term #3: does the term render the claims invalid under *IPXL* for mixing apparatus and method limitations? The arguments presented by Kaist mirror the arguments discussed above with reference to Term #3. Defendants contend that “selecting the size of the contact region which is in contact with said metal layer to be greater than the width of said Fin active region and/or the length of said gate” is a method step. Defendants point to Figure 6d as illustrating the claimed contact region as region 46.

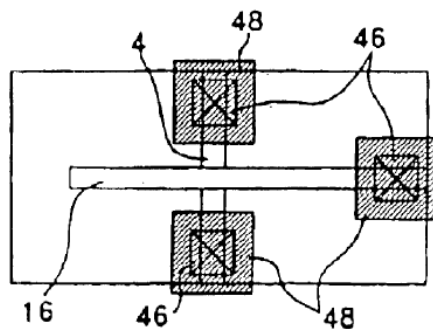


Fig. 6d

Dkt. No. 63 at 22 (citing '055 Patent Figure 6d). The Defendants argue that the EPR Examiners found that, “[i]f the selection is made, then the claims recite that the properties of the device change.” *Id.* at 23 (citing Dkt. No. 63-8 (June 18, 2019 Final Office Action), at 57). According to Defendants, this means that a person of ordinary skill in the art would be uncertain as to what



causes infringement between (1) the action of “selecting” or (2) the device with properties influenced by the selection.<sup>4</sup> *Id.*

The issues raised by this term are substantially the same to those raised with regard to Term #3. For the same reasons identified for Term #3, Term #4 is not indefinite under *IPXL*.

The Court finds that **“the device as claimed in claim 1, wherein the contact resistance is reduced by selecting the size of a contact region which is in contact with said metal layer to be greater than the width of said Fin active region and/or the length of said gate” is not indefinite** and the term has its **plain and ordinary meaning**.

7. **“said first oxidation layer” and “the thickness of said gate oxide layer is between 0.5 nm and 10 nm, and the thickness of said first oxidation layer is between 0.5 nm and 200 nm” (claims 1–6, 11, 12, and 15–17)**

<b>Kaist’s Proposed Construction</b>	<b>Defendants’ Proposed Construction</b>
Not indefinite. “said first oxidation layer” means “said first oxide layer”	Indefinite

#### **A. Positions of the Parties**

In the First Case, the parties disputed whether “said first oxidation layer” is indefinite as lacking antecedent basis or whether the term refers to the earlier-recited “a first oxide layer.” The dispute between the parties remains the same. Defendants contend that the EPR Examiners found the term ambiguous:

[I]n view of the lack of any clear antecedent basis, this phrase would generally be rejectable under 35 U.S.C. §112 (2nd ¶) and/or 112 (1<sup>st</sup> ¶). However, such rejections

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<sup>4</sup> Defendants also contend that the term is also indefinite for the use of “reduced” and “size of the contact region” as briefed and argued in the First Case. Defendants rely on their prior briefing for such issues. Dkt. No. 63 at 23, n.5.

are not permitted in ex parte reexamination. See 36 C.F.R. §1.552. Thus, Examiners are interpreting this phrase as best as possible to address the prior art.

Dkt. No. 63 at 23 (quoting Dkt. No. 63-8 (June 18, 2019 Final Office Action), at 12 n.2). According to Defendants, the fact the Examiners ultimately did not find the term indefinite (because they were not permitted to) and interpreted the term “as best as possible,” does not render the term definite. Kaist contends that the EPR Examiners’ statement does not provide new considerations to disturb the Court’s findings. Dkt. No. 65 at 10.

### **B. Analysis**

The issue presented to the Court is the same issue as previously resolved by the Court. The EPR Examiners apply a broadest reasonable interpretation to the claims. However, here the Court must apply *Phillips*, reviewing the claims “in view of the specification, of which they are a part.” *Phillips*, F15 F.3d at 1314–15. Further, a claim, when viewed in light of the intrinsic evidence, must “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus*, 572 U.S. at 910. The EPR evidence presented by Defendants does not sway the Court from the determination as described in the First Case Order and its reasoning, which was based upon the specification itself and the claim language. That rationale is still applicable now. *See* First Case Order at 28–29. There, the Court found that “said first oxidation layer” meant “said first layer” and that the intrinsic evidence informed those skilled in the art about the scope of the invention with reasonable certainty for this term. In context of all the claims, specification, and prosecution history, the Court still applies the reasoning of the First Court Order.

The Court finds that the term is **not indefinite**. The Court construes “**said first oxidation layer**” to mean “**said first oxide layer**” and finds that the remainder of the term has its **plain and ordinary meaning**.

9. “the two top corners of said Fin active region are chamfered through an oxidation and etching, or (and) annealing process in a hydrogen atmosphere” (claim 15)

Kaist’s Proposed Construction	Defendants’ Proposed Construction
Not indefinite. “the two top corners . . . are chamfered” means “the two top corners are beveled or rounded” “or (and)” means “and/or”	Indefinite product-by-process limitation

In the First Case Order, this Court reached determinations as to the “chamfered” limitation and the “or (and)” limitation. First Case Order at 22–24 and 47–48. Defendants do not challenge such determinations now. In the First Case, Defendants similarly argued that the term was indefinite for being a product-by-process claim without reciting the steps for making the claimed product. As noted in the First Order, Defendants’ experts in that case did not provide supporting evidence regarding indefiniteness. Rather, Defendants merely provided a conclusory statement of indefiniteness. *Id.* at 47–48. In the briefing now before the Court, the Defendants similarly do not cite to expert evidence. However, Defendants now point to a statement made by the EPR Examiners:

Examiners further note that the remaining features of claim 15 recite the manner to which the chamfers are made, i.e., “through an oxidation and etching, or (and) annealing process in a hydrogen atmosphere.” Thus, this remaining portion of claim 15 is merely a product-by-process limitation, and accordingly, determination of patentability is based on the product itself. See MPEP 2113. Since the combination of Inokawa in view of Chen otherwise teaches the product/device of claim 15, the manner of making the product/device is not controlling to the patentability of the product thereof.

Dkt. No. 63 at 35 (quoting Dkt. No. 63-8 (June 18, 2019 Final Office Action), at 27). Defendants contend that, in order to be definite, the claims reciting a product-by-process must recite the steps for making the product. *Id.* Defendants contend that the claim terms fail to recite the steps for

making the product. However, Defendants do not point to any evidence of such. *Id.* at 25–26. In fact, the passage cited appears to imply the opposite, as the Examiners appear to contend that the claim itself describes the “chamfered” process, more specifically the Examiners said that the chamfering is “made, i.e., ‘through an oxidation and etching, or (and) annealing process in a hydrogen atmosphere.’” Moreover, as noted in the First Case Order:

As described in the specification, (1) oxidation and etching and (2) annealing may be done. The specification, however, indicates that alternatively, (1) oxidation and etching or (2) annealing may be done. Though use of “and/or” or “or/and” may be more commonplace, in context of the intrinsic record, the claim’s use of “or (and)” provides reasonable certainty as to the scope of the claim in conformance with the specification. This also conforms to the only evidence of one skilled in the art presented by the parties. *See* Kuhn Decl. [Dkt. # 93-4] ¶¶ 161–62.

First Case Order at 48. Thus, the language of the claim notes that the chamfering is achieved “through an oxidation and etching, or (and) annealing process in a hydrogen atmosphere,” and the specification provides in more detail “the Fin active region 4 can be chamfered through an oxidation above 900° C. and etching, and (or) annealing process in a hydrogen atmosphere in order to improve the durability of the device.” ’055 Patent 6:4–8. This conforms to the prior expert testimony. Thus, the language of the claim is clear, the language of the claim conforms to the specification, and the experts have understood the claim. Further, when Defendants were asked at the hearing as to whether there was any evidence in the record that one of ordinary skill in the art would not understand claim 15, Defendants acknowledge that there is nothing else in the record other than the Examiners’ statement. Dkt. No. 73 at 62–63.

Defendants cite to *In re Downing*, 754 F.App’x 988, 995 (Fed. Cir. 2018) (non-precedential) as requiring the claims to be found indefinite for being a product-by-process claim that does not recite the process. In *Downing*, the claim was directed toward a “resource planning forecast product operable in a computer,” and the Federal Circuit agreed with the Patent Office

statement that “although the claim expressly states that it is a product-by-process claim, the claim limitations that follow—‘designing a diffusion-based proprietary forecasting technique,’ ‘structuring presentations,’ and ‘constructing one-time settings’—are not steps detailing how the claimed product, a ‘resource planning forecast product,’ is made, but rather reflect functions performed by the product.” *Id.* The Federal Circuit then stated that the claim limitations that follow should define the “process by which [the structure claimed] is made.” *Id.* (citing *In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985)). The current claims present very different issues than the issues raised in *Downing*. Moreover, to the extent Defendants argue that the claim limitation is a product-by-process limitation, here the claims recite what the Federal Circuit said was lacking in *Downing*, the technique by which the claimed chamfering is achieved.

The Court finds that the term is **not indefinite**, finds that “**the two top corners . . . are chamfered**” means “**the two top corners are beveled or rounded**” and finds that “**or (and)**” means “**and/or**.”

**10. “a Fin active region which is a wall-shape single crystalline silicon” (all asserted claims)**

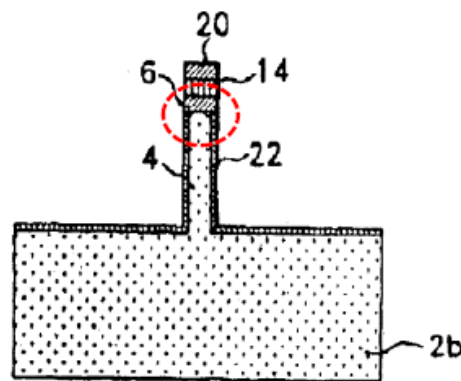
Kaist’s Proposed Construction	Defendants’ Proposed Construction
This term has a plain and ordinary meaning, and no construction is necessary.	“a Fin active region which is a wall-shape structure that includes a flat top and is single crystalline silicon”

The parties dispute whether the Fin active region must have “a flat top.”

**A. Positions of the Parties**

Kaist notes that, in the First Case, Defendants initially listed this term in Defendants’ disclosure of terms for construction but later withdrew the term and accepted the plain and ordinary meaning. Dkt. No. 61 at 23. Kaist contends that Defendants are merely importing a limitation from

the specification. Kaist acknowledges that the patent teaches that a Fin may have a flat top but Kaist contends that it need not *only* be flat. *Id.* at 24–25. Specifically, Kaist notes that the patent teaches that the top may be “chamfered.” *Id.* at 24. Kaist notes that, in the First Case Order, the Court found that “chamfered” means “beveled or rounded.” *Id.* Kaist further points to claim 15 which depends from claim 1 and claims that “the two top corners of said Fin active region are chamfered.” *Id.* at 25. Kaist further points to the Fin 4 of Figure 13a which Kaist states appears to have a rounded top:



*Id.* at 25 (illustrating Figure 13a with added red highlighting).

Defendants note that the term was not construed in the First Case. Dkt. No. 63 at 8. Defendants contend that, after the claim construction in the First Case, Kaist took varying and conflicting positions as to the meaning of “wall-shape:” (1) for a summary judgment “the meaning of wall-shape does not exclude any particular shape,” (2) in Kuhn’s expert testimony at trial wall-shaped connoted the “creation” of “a fully depleted region,” (3) in Kuhn’s other expert testimony at trial wall-shape means “rectilinear,” and (4) in the EPR “the term ‘wall-shape’ emphasizes that the structure has an aspect ratio in which the height is sufficiently greater than the width to ensure that the Fin active region is fully depleted.” *Id.* at 8–9.

Defendants contend that the language of the claims requires a flat top. *Id.* at 9–10. Specifically, Defendants point to dependent claim 15 which describes the “top two corners” of the Fin as being chamfered. *Id.* at 9. Defendants contend that if a wall-shaped structure has “top two corners” then inherently the top must be flat. *Id.* at 9–10. Defendants contend that without a flat top there are no corners to chamfer. *Id.*

Defendants contend that the specification requires a wall-shaped Fin and that every embodiment in the specification teaches a flat top. *Id.* at 11–15. Defendants note that even embodiments in which the sides of the Fin active region (region 4) are curved the top is still flat:

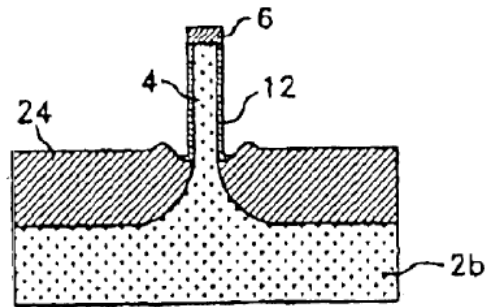
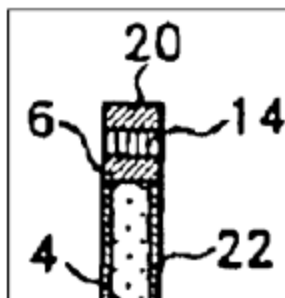
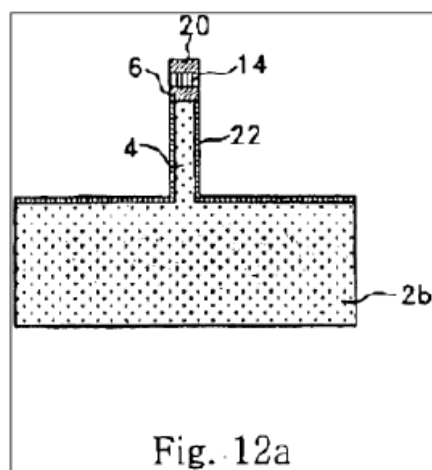


Fig. 13d

*Id.* at 11–12 (illustrating Figure 13d). As to the “chamfered” issue, Defendants contend that Kaist leaves out a key aspect of the specification. Specifically, Defendants contend that the specification passage teaches that it is the top corners that are chamfered, not the whole top. *Id.* at 12 (citing ’055 Patent at 6:4–5 (“the top corners of Fin active region 4 can be chamfered”)). As for Figure 13a, Defendants contend that the specification makes no mention of the top being rounded and that the figure does not illustrate a rounded top. *Id.* at 13. Rather, Defendants contend that the regular dotted pattern indicating the bulk silicon material in the region 4 obscures the top and on close inspection the top is actually flat:



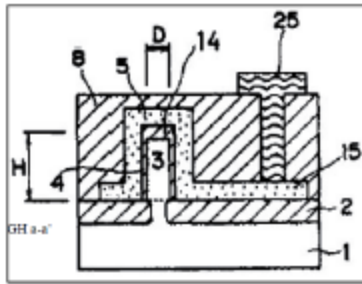
*Id.* at 13 (illustrating expanded view of a portion of Figure 13a). Further, Defendants note that the specification teaches that Figures 13a–13d vary from Figures 12a–12d only in the makeup of a spacer 30 (which is not shown in Figure 12a and 13a). Defendants contend that Figure 12a clearly shows a flat top.



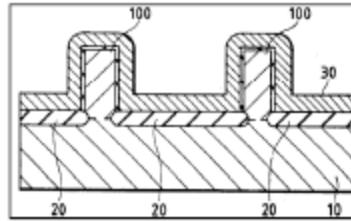
*Id.* at 14 (illustrating Figure 12a). Defendants further note that Figures 13a–13d illustrate a sequence of processing steps and that Figures 13b–13d clearly show a flat top without the dots obscuring the corners. *Id.*

Defendants further contend that the EPR Examiners identified three references which the Examiners found to be “wall-shaped.” *Id.* at 15. Defendants note that all of the references had flat tops:

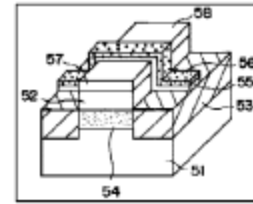




*Inokawa*



*Hisamoto*



*Mizuno*

*Id.* Further, Defendants note that Kaist argued that Inokawa and Hisamoto are not wall shaped due to having curved bottoms. Defendants contend that the Examiners rejected this assertion as being inconsistent with Kaist’s position in the First Case: “during litigation, Patent Owner argues that ‘[t]he plain and ordinary meaning of wall-shape does not exclude any particular shape. Walls may have different shapes—some with curved sides, some without.’” *Id.* (quoting Dkt. No. 63-8 (June 18, 2019 Final Office Action), at 10). Defendants contend that even though the Examiners did not exclude walls of a particular shape, the fact that Fins with flat tops in each of the references were identified supports Defendants’ construction. *Id.* at 15–16.

In reply, Kaist contends that Defendants are merely incorporating a limitation from the specification. Kaist contends that at no time in the prior proceedings did Kaist assert that the top of the wall could not be chamfered. Further, Kaist contends that Defendants’ experts never stated that the top of a wall must be flat. Dkt. No. 65 at 7. Kaist further contends that requiring a flat top would render claim 15 unintelligible as the claim would require both a flat top profile and a chamfered profile. *Id.* at 8.

## **B. Analysis**

Defendants do not present evidence that establishes that the plain meaning of “wall-shape” requires a structure that is limited to a flat top. Rather, Defendants contend that a limitation from

the specification must be incorporated into the claims. “Although the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.” *Comark Commc’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (citation omitted); *see also Phillips*, 415 F.3d at 1323. “[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). Thus, even a single embodiment is not necessarily enough to read a limitation into the claim from the specification. *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011) (“[E]ven where a patent describes only a single embodiment, claims will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words of expressions of manifest exclusion or restriction.”). Defendants have not pointed to evidence sufficient in the record to limit the claims to a “flat top” wall, even if that is the only embodiment disclosed.

Moreover, the specification explicitly teaches wall shapes in which the top is not flat. The specification states that “the top two corners of the Fin active region 4 can be chamfered.” ’055 Patent 6:4–5. Even accepting Defendants’ arguments, such a chamfered Fin would have a top profile that has two chamfered portions (angled or rounded at the corners) and then a flat portion (between the chamfered corners). Defendants’ construction would exclude this disclosed embodiment as the top would not be flat, but rather would include angled and rounded sections. It is noted that claim 15 also explicitly claims chamfered corners. Defendants in essence argue for a construction that excludes a preferred (and claimed) embodiment and acknowledge that such a

construction “is rarely, if ever, correct.” *See Accent Packaging, Inc. v. Leggett & Platt, Inc.*, 707 F.3d 1318, 1326 (Fed. Cir. 2013).

At the oral hearing, Defendants placed great emphasis on the use of “the present invention” in the specification. Dkt. No. 73 at 8–10. However, of those passages merely refer to “wall-shaped.” In fact, Defendants have not identified any use of the language “flat” with reference to the shape of the wall in the intrinsic evidence, and the specification provides no such reference. This fact alone highly counsels against Defendants’ construction. The extrinsic evidence, including the testimony of the experts, is similarly devoid of such evidence. As the evidence does not mention the flat top, a flat shape of the top of the wall is never even mentioned in the evidence (extrinsic or intrinsic) as being important. The Court asked Defendants: “is there anything in the specification or expert declarations that indicates that a flat top is important to the invention?” *Id.* at 10. Defendants answered:

[t]here’s nothing that goes that far, Your Honor, in terms of saying the flat top specifically is -- is the -- is the key to the Fin, but when they describe it -- and certainly the Fin is obviously very important to this invention, but when they describe it with reference to all these figures, that has the flat top. But I can’t point you to anything that says specifically the flat top is the most important thing about this invention. It doesn’t say that anywhere. But -- so we’re just piecing this together, Your Honor, with all the evidence that we’ve been looking at.

*Id.* at 10–11. Similarly, when asked whether there was extrinsic evidence that wall-shape in this art means a “flat top,” Defendants acknowledged that there was none other than the “plain usage” of wall, such as the wall of China. *Id.* at 26.<sup>5</sup>

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<sup>5</sup> When the Court questioned whether the wall of China was actually flat, Defendants clarified that their construction did not mean the top had to be flat but rather that some portion of the wall had to have a flat surface. Dkt. No. 73 at 26-27. Defendants’ shifting meaning as to “flat top” to avoid common references to walls that do not have flat tops provides further reason to reject Defendants’ construction.

Based on all the evidence, the Court rejects the flat top requirement. The Court previously construed “chamfered” to mean “beveled or rounded.” First Court Order at 23–24. The Court maintains that construction for the reasons recited in the First Court Order.

The Court construes “**a Fin active region which is a wall-shape single crystalline silicon**” to have its **plain and ordinary meaning**.

## **V. CONCLUSION**

The Court adopts the constructions above for the disputed and agreed terms of the Asserted Patents. Furthermore, the parties should ensure that all testimony that relates to the terms addressed in this Order is constrained by the Court’s reasoning. However, in the presence of the jury, the parties should not expressly or implicitly refer to each other’s claim construction positions and should not expressly refer to any portion of this Order that is not an actual construction adopted by the Court. The references to the claim construction process should be limited to informing the jury of the constructions adopted by the Court.

**SIGNED this 26th day of March, 2020.**

  
ROY S. PAYNE  
UNITED STATES MAGISTRATE JUDGE